EXPLICIT CORPORATE SOCIAL RESPONSIBILITY DISCLOSURE: A TOPIC-BASED APPROACH

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ABSTRACT

In this paper, we investigate whether companies located in liberal market economies report more explicitly about specific CSR topics than firms located in coordinated market economies. For a sample of 3,384 CSR reports of European and US firms, we perform a textual analysis over the period 2008 – 2016. Our results confirm that companies located in LMEs report more explicitly about education and philanthropy; for parental leave and climate, we find a negative and significant association. We also find that CSR performance, size and report length are positively associated with the explicitness of our topic-specific CSR disclosure scores. Our results are robust to a variety of alternative measures.

Keywords: CSR disclosure; explicit CSR; implicit CSR; textual analysis; topic-based analysis

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1. Introduction

Research on corporate social responsibility (CSR) reveals significant cross-national differences in both the level and topics of CSR disclosure. Such differences can be explained based on the national business systems approach (Hall & Soskice, 2001; Maurice & Sorge, 2000; Maurice, Sorge & Warner, 1980), arguing that firms' CSR practices and disclosures are embedded in the institutional environment, with coordinated market economies (CMEs) and liberal market economies (LMEs) forming the antipodes of this environment.

While prior studies reveal higher disclosure levels among firms located in stakeholder-oriented (primarily European) countries compared to firms located in countries with a more shareholder focus such as the United States (Brammer & Pavelin, 2005; Kolk & Perego, 2010; Orij, 2010), studies examining specific CSR disclosure topics refine this picture, indicating that US firms report more explicitly on civic engagement in their CSR disclosure compared to European firms (Chen & Bouvain, 2009; Fifka, 2013; Maignan & Ralston, 2002).

A well-documented and accepted theoretical explanation of this phenomenon is provided by Matten & Moon (2008) through the elaboration of the implicit-explicit framework. According to this framework, firms in LMEs communicate more explicitly about their CSR engagement and more explicitly integrate such activities into their CSR disclosure. In contrast, firms in CMEs do not consider these CSR activities as deliberate corporate decisions and hence do not explicitly integrate them into their respective disclosure. However, while Matten & Moon (2008) do not provide any means for measuring this expliciteness, they argue that theses differences occur with respect to both the language used to communicate CSR issues and the intent of their CSR activities.

Because CSR reporting influences communication strategies (Unerman, 2008), we expect this to be reflected in the companies' reporting strategies. Specifically, we expect that for firms in LMEs, CSR and the communication about it are part of a broader strategy in the context of a firm's reputation. For firms in CMEs, in contrast, a considerable number of CSR activities are regulated by the institutional environment. Consequently, firms in CMEs do not consider these CSR activities as deliberate corporate decisions and hence do not explicitly integrate them into their respective disclosure. Thus, we argue that in order to communicate CSR information to readers more explicitly, companies focus on specific topics, thereby concentrating particularly on those where companies can differentiate themselves from others. We therefore suggest topic-related measures to consider the explicitness of CSR disclosures. Due to significant differences in institutional settings, we focus on the following disclosure topics – education, philanthropy, parental (leave) policies and climate. Specifically, we expect CSR reports provided by firms in LMEs to address these topics more explicitly compared to those of firms in CMEs.

Our sample is comprised of voluntary CSR disclosures provided by firms listed in the STOXX 600 of Europe and in the U.S. For a reporting period of eight years ranging from 2008 to 2016, we employ a sample of 3,834 firm-year voluntary CSR reports. To measure the topic-specific explicitness of the CSR disclosure we follow Hoberg & Maksimovic (2015) and calculate our topic-specific CSR measure for philanthropy, education, parental leave and climate, respectively. Our empirical findings support our expectations for philanthropy and education. However, with respect to parental leave and climate we do not find evidence that companies in CMEs report more explicitly. In addition, we provide further insights into the data and additional analyses that substantiate our findings.

The present study adds to the stream of literature investigating cross-national differences of CSR disclosure by providing large-sample evidence on the explicitness of specific CSR topics. Whereas it is common to attribute the importance of certain CSR

disclosure to specific industries, cross-national differences are less likely considered. However, our study results suggest that the institutional setting not only affects the explicitness of topic-specific CSR disclosure but also differs depending on the CSR topic under consideration. Therefore, our contribution to the literature is threefold.

First, to the best of our knowledge, the current study is the first to apply an explicit topic-based approach to the measurement of CSR disclosure. The fact that CSR is composed – by its nature – of different topics is not considered when conducting CSR disclosure research based only on (often dichotomized) levels of disclosure. Interestingly, most of the empirical and large-sample evidence focuses on levels of CSR disclosure. Thus, our textual measure of CSR topics accounts for this caveat and allows for a more accurate representation of CSR.

Second, the present study is among the first to apply textual analysis in the context of CSR disclosure and thus, one of the first to grasp its specifics through the application of an appropriate analysis tool. Except for Cannon, Ling, Wang & Watanabe (forthcoming) who recently investigated four CSR topics based on groups of keywords, CSR disclosure research has been primarily characterized by a focus on the quantity and quality of CSR disclosure with either large-sample evidence based on (proprietary) data (Cahan, De Villiers, Jeter, Naiker & Van Staden, 2016; Cormier, Magnan & van Velthoven, 2005; Gao, Dong, Ni & Fu, 2016) or small-sample evidence based on hand-collected data (Blacconiere & Patten, 1994; Clarkson, Fang, Li & Richardson, 2013; Lu, Shailer & Yu, forthcoming). Textual analysis, however, allows the consideration of the specific characteristics of CSR disclosure, such as the language and the topics, and hence adds a new perspective to CSR disclosure research. By using textual analysis on CSR disclosure, we provide evidence that is objective, reliable and replicable. Also, in this paper, we introduce a new method to measure the similarity of CSR disclosure with pre-defined topics which is closely related to Hoberg & Maksimovic (2015).

Finally, our results also refine the theoretical framework of Matten & Moon (2008). In particular, our results indicate that the framework cannot be applied in this form to all CSR

topics mentioned in their paper. Specifically, we find that firms in LMEs report more explicitly about education and philanthropy, but we are not able to confirm the expectations for parental leave and climate.

These insights are relevant for practitioners as well as regulators and researchers alike. Considering that CSR reporting, in contrast to financial reporting, is less regulated on national levels due to historic and institutional differences, companies generally must refer on global frameworks. These are mostly general in nature and policy makers have yet not come up with distinct guidance, including a consistent definition of CSR reporting per se (Stolowy et al., 2018). Thus, especially providers of CSR disclosures, – in particular, large business groups – need to be aware of topic-specific differences in order to avoid misunderstandings and threats to their legitimacy outside their home countries. Such misunderstandings can arise if corporations that are located in CMEs do not explicitly address these topics in their CSR engagements in LMEs. In addition, with the increasing importance of sustainable investments and the selection mechanisms thereof, institutional differences and their impact on voluntary CSR disclosure need to be considered. Finally, also for researchers it is critical to account for these different understandings of CSR practices and disclosure, as they are likely to be important when investigating the consequences of CSR disclosure in a cross-national setting. For instance, explicit CSR disclosure might drive and even increase the value relevance in LMEs compared to CMEs.

This paper is structured as follows. The next section presents a review of the literature. Section three provides the theoretical background and the development of the hypotheses. Section four describes the research design, notably the sampling, the disclosure measures, the empirical model and the control variables. Section five presents the descriptive and multivariate findings and section six insights from additional robustness tests. The final section provides conclusions.

2. Literature Review

Among cross-national studies on CSR disclosure, we distinguish between studies that concentrate on CSR disclosure level and studies that focus on specific CSR disclosure topics.

The first group of studies typically draws on legitimacy and stakeholder theory and argue for higher CSR disclosure levels among firms located in stakeholder-oriented countries compared to firms located in shareholder-oriented countries. In stakeholder-oriented countries a broad group of stakeholders generally possess the power to influence a company's business operations and firms respond to this pressure through voluntary CSR disclosure. Our literature review refers to a broad understanding of CSR disclosure level, including studies on CSR disclosure adoption rate, CSR disclosure quantity, CSR disclosure quality and CSR assurance adoption rate. Although the studies differ in their classification of sample countries, they generally find support for this approach. For instance, Van der Laan Smith, Adhikari & Tondkar (2005) report a higher level in both CSR disclosure quantity and quality provided by firms located in stakeholder-oriented countries. Other studies reveal a higher likelihood of providing voluntary CSR disclosure and of obtaining voluntary assurance on their CSR disclosure (Kolk & Perego, 2010; Simnett, Vanstraelen & Chua, 2009) for firms located in stakeholder-oriented countries. Likewise, Orij (2010), who cross-sectionally investigates CSR disclosures made by 600 firms across 22 countries, shows that the "masculinity" cultural dimension (which is typically more prevalent in shareholder-oriented countries) is negatively related to CSR disclosure level. Only recently, Cahan et al. (2016) investigate the relation between nation-level institutions, such as democracy, press freedom and commitment to the environment, and CSR disclosure level in the first stage, and the relation between unexpected CSR disclosure and firm value in the second stage. Based on a sample of 676 firms from 22 different countries they report positive relations between these institutional measures and CSR disclosure level as well as a positive association between unexpected CSR disclosure and firm value. Taken together, the findings of these studies primarily reveal a higher level of CSR

disclosure by firms located in stakeholder-oriented countries (e.g., Europe) compared to firms located in shareholder-oriented countries such as the United States.

The second group of studies focuses on the topics of voluntary CSR disclosure. These studies typically apply a national business systems approach (Hall & Soskice, 2001; Maurice & Sorge, 2000; Maurice et al., 1980) to explain differences in the CSR disclosure topics among firms located in different countries classified, for example, as LMEs and CMEs (see Hall & Soskice (2001).

Maignan and Ralston (2002) analyse differences in CSR disclosure between European (i.e., French, Dutch and UK) and US firms. Results from their study reveal that UK and US firms are more likely to disclose CSR issues on their websites than Dutch and French firms, and that US firms are more likely to discuss philanthropic programmes, volunteerism and education compared to Dutch and French firms. Similarly, based on a textual analysis of 34 CSR reports of Australian, German, UK and US firms, Chen and Bouvain (2009) reveal differences in the issues addressed in German versus Australian, UK and US reports. For instance, there is a stronger (weaker) focus on community (social) issues in US reports compared to reports issued by firms located in the other countries. Moreover, Fifka (2013) investigates CSR disclosure of German and US firms with regard to reporting on corporate citizenship. He also finds significantly more disclosure on civic engagement provided by US firms compared to German firms. These findings are moderated by Ehnert, Parsa, Roper, Wagner & Muller-Camen (2016), who find almost no differences in the sustainability disclosure on human resource practices between firms located in LMEs and those located in CMEs. Taken together, this second group of studies moderates the results from the first group of studies. While the first group of studies reveals higher CSR disclosure levels among firms located in stakeholder-oriented countries, the second group of studies indicates that certain topics, in particular civic and philanthropic engagement, are particularly prevalent in the CSR disclosure of firms located in LMEs.

Finally, there is prior research investigating the narratives in the context of CSR disclosure. Focussing on mandatory environmental disclosures of 10-K reports Cho, Roberts & Patten (2010) find that worse environmental performers use language and verbal tone to influence their public impression. Similarly, in the context of integrated reporting, Melloni, Caglio & Perego (2017) provide evidence that poor social performers provide less readable reports while Caglio, Melloni & Perego (forthcoming) document that market participants appreciate readable, short and focused integrated reports.

More recently, Cannon et al. (forthcoming) analyse the association between CSR keywords with respect to philanthropy, business practice and product in 10-K filings and firm competitive advantage. Their results indicate that the intensity of disclosures in these CSR categories is related to varying competitive advantage.

3. Hypothesis Development

Previous literature has shown that legitimacy is the main theoretical explanation for voluntary disclosure of non-financial information (Cho, Guidry, Hageman & Patten, 2012; Cho & Patten, 2007). It also documents that communication strategies, including the management of disclosure, can be used as a tool to maintain or gain legitimacy (Cho et al., 2010; Neu, Warsame & Pedwell, 1998; Patten, 2002). More precisely, voluntary disclosure aims at influencing the public perception regarding a company's CSR performance (Cho et al., 2012). Specifically, theory suggests that the extent of the disclosure is a function of public pressure (Patten, 1991).

For country-level comparisons, however, it is therefore important to consider the institutional context of the countries under question. One approach is based on national business systems (Hall & Soskice, 2001; Maurice & Sorge, 2000; Maurice et al., 1980), asserting that the institutional context is essential for an understanding of the organization and management of firms. Thus, national business systems also affect firms' implementation of CSR, with subsequent effects on their actions and disclosures. The two antipodes are LME

and CME; in general, LMEs are characterized by a political system that encourages individualism and corporate discretion; a strong dependence on stock markets as firms' primary financing source; weak levels of employment protection; and a cultural system that depends on individual participation and philanthropy (Hall & Soskice, 2001; Matten & Moon, 2008). CMEs, on the other hand, are characterized by political systems that are based on collectivism and solidarity; high levels of employment protection and cultural engagement; less reliance from firms on stock markets as financing sources (Hall & Soskice, 2001; Matten & Moon, 2008). Therefore, individualism, liberalism and corporate discretion are the key attributes of LMEs, as opposed to collectivism, solidarity and firms' mandatory engagement of CMEs (Matten & Moon, 2008).

Consequently, national business systems will influence both what topics companies report and how they address them, specifically in the context of CSR. This will vary depending on the country-level materiality (importance) of topics, resulting of different institutional contexts. Firms can address those CSR topics either *explicitly* or *implicitly*. In an institutional environment of individualism and liberalism (LME), CSR-related topics are generally less regulated, resulting in society expecting firms to fill this gap on CSR issues. Specifically, they expect CSR to act as an explicit substitute for the weak institutionalized social solidarity in LMEs (Matten & Moon, 2008). Thus, firms will put more emphasis on disclosing their voluntary CSR efforts and *explicitly* communicate their commitment towards CSR activities in a societal context (Matten & Moon, 2008). In CMEs, on the other hand, CSR topics are ex ante already embedded in the institutional context and thus, firm CSR engagement is mostly driven by formal and inform rules. The discretion to explicitly engage in and communicate about CSR activities is limited and firms can only report implicitly about their CSR activities. They do not represent firms' deliberate decisions and represent no means for differentiation from others. Therefore, firms will not explicitly communicate about these topics through voluntary disclosure.

Relying on Unerman (2008), who argues that a corporation's reputation can be influenced by CSR reporting, we expect this to be reflected in the companies' reporting strategies. Specifically, we expect that for firms in LMEs, CSR and the communication about it are part of a broader strategy in the context of a firm's reputation. For firms in CMEs, in contrast, a considerable number of CSR activities are regulated by the institutional environment. Thus, we expect firms in LMEs to report more explicit about their CSR activities than firms in CMEs and posit the following hypothesis:

> HYPOTHESIS I. *Voluntary CSR disclosure provided by firms located in LMEs is more explicit with respect to CSR topics than disclosure provided by firms located in CMEs.*

The most important areas for which the institutional void in LMEs is particularly prevalent comprise workers' rights, environmental protection, education and corporate irresponsibility (Matten & Moon, 2008). For the purpose of this study, we focus on *education* and *philanthropy* (within the area of education), and *parental (leave) policies* (within the area of workers' rights) as well as climate change within the area of environmental protection.

4. Research Design

Sample

For our sample, we rely on the constituents of the STOXX 600 for both Europe and the US for the years 2008 to 2016, thus including only voluntary adopters. We classify European countries as CMEs and the US as LME. Thus, we consider the UK as an example for a CME for the following reasons. First, the UK for much of the 20th century has been a leading country in establishing welfare state institutions, such as a strong public education system, a public health care system, and a relatively strong, entrenched industrial relations system (e.g. King, 1975; Moon & Richardson, 1992; Rose, 1985). Second, regulatory frameworks for business in areas of employment, human rights and the environment – just to name a few examples – have been strongly dominated by the CME driven approach of European Union legislation and their subsequent implementation in the UK as a EU member

state (e.g. Bache & Jordan, 2006; Löfstedt & Vogel, 2001; Vogel, 1986). Third, the introduction of CSR in the UK was led and orchestrated by government and many of its policies, such as the CSR Academy, a cabinet minister for CSR, or governmental procurement legislation such as the Ethical Trade Initiative (Knudsen, Moon & Slager, 2015). Finally, we also follow the tradition of other comparative studies of CSR practices (e.g., Brammer & Pavelin, 2005; Maignan & Ralston, 2002) that have established significant trays of the UK as a CME in a transatlantic comparison. We address potential concerns regarding this classification in the robustness section of the paper.

For each of the sample firms we collected their voluntary CSR reports for reporting years 2008-2015.[1] We include separate CSR reports, environmental and social reports, and integrated reports.[2]

[Insert Table 1 about here]

Panel A of Table 1 provides an overview of the sample selection process. In total, we obtained 3,834 reports (i.e. firm-year observations) for our sample of 1,200 firms and nine reporting years. For 5,943 observations, we do not find any voluntary CSR information and we were not able to process 584 of the reports in the textual analysis for various reasons, thus our sample was reduced to 4,253 observations. We drop 419 observations due to missing values for the control variables. As such, our final sample consists of 3,834 observations—composed of 2,038 observations for firms that are located in LMEs and 1,796 observations for firms that are located in CMEs.[3] The sample distribution by country is depicted in Panel B of Table 1.

[1] We either manually collected the report or retrieved them from www.corporateregister.com.
[2] We include integrated reports if these reports are explicitly declared to be "integrated" reports, notwithstanding whether they follow the International Integrated Reporting <IR> framework.
[3] We base our categorization on Matten & Moon (2008). In our robustness section we provide an alternative categorization.

Panel C of Table 1 provides the sample distribution by industry group (one-digit SIC code). The sample firms are not completely equally distributed across the industry groups in the subsample of firms that are located in LMEs and firms that are located in CMEs.

Topic-Specific Disclosure Measures

In order to test our hypothesis, we rely on four topic-specific disclosure, namely *discl_education*, *discl_philanthropy, discl_parental and discl_climate*. To identify how explicit voluntary CSR disclosure addresses the predefined topics, we apply textual analysis and follow Mittelbach-Hoermanseder, Hummel & Rammerstorfer (2019) and apply the methodology of Hoberg & Maksimovic (2015) who identified degrees of financial constraint based on textual analysis.

After the application of various standard pre-processing methods to the texts, we define search terms for every topic under consideration. With regards to education, we identify reports that contain the word "scholarship". We do not directly search for "education", as this term is often used in the context of employee training. With regards to philanthropy, we identify reports that contain the terms "philanthropy" or "charitable giving". As for parental policies, we identify reports that contain the terms "parental leave", "maternity leave", or "paternity leave". With respect to disclosure on climate change, we search for "climate change", "global warming", "Kyoto protocol", "CO2", "carbon emission" and "greenhouse gas".[4] Based on the results from these search queries, we retrieve the words that appear directly before and after the search terms.[5] These so-called word windows capture the respective topic more broadly than specific search terms. Each word window has a length of 20 words, i.e. the nine or ten words preceding the search term and the nine words following

[4] Note that the words of the terms "parental leave", "maternity leave", "paternity leave", "charitable giving", "climate change", "global warming", "Kyoto Protocol", "carbon emission" and "greenhouse gas" are required to exist exactly side by side (separated only by stop words, if at all).

[5] Examples of the twenty-word windows along with the corresponding CSR disclosure are provided in Appendix I.

the search term.[6] We refer to these word windows as 20-word windows. For each topic, we aggregate the retrieved 20-word windows to construct a training set, i.e. one training set for each topic. To measure how explicit a report addresses the pre-defined topics, we calculate the similarity between every CSR report and the respective training set. Therefore, we compute the *cosine similarity* between the text of each CSR report and the vocabulary of the training set for every topic. Thus, our topic-specific disclosure measures proxy for how explicit CSR disclosure address the topics education, philanthropy, parental leave, education and climate.

In the robustness section of the paper, we apply alternative topic-specific disclosure measures. Details on the procedure of constructing the topic-specific disclosure measures are provided in Mittelbach-Hoermanseder et al. (2019).

Empirical Model and Variables

We use the following empirical model to investigate whether there are differences in voluntary CSR disclosure with respect to the language of the disclosure as well as the reporting on certain topics between firms that are located in LMEs versus firms that are located in CMEs.

$$\begin{aligned} Disclosure = \beta_0 \; & + \beta_1 \, LME + \beta_2 CSR\_performance + \beta_3 \, size \\ & + \beta_4 \, financial\_performance + \beta_5 \, leverage + \beta_6 \, report\_length \\ & + \beta_7 \, gri + \sum_{i=8}^{i=12} \beta_i \, industry\_dummies \\ & + \sum_{j=13}^{i=20} \beta_j \, year\_dummies + \varepsilon \end{aligned} \quad (1)$$

Disclosure proxies for our dependent topic-specifics CSR disclosure including *discl_education*, *discl_philanthropy, discl_parental* and *discl_climate* which are described in detail in section 4.2. Our main variable of interest is LME, which indicates whether the firm is located in an LME versus a CME.

Prior studies on the determinants of voluntary CSR disclosure guide our selection of control variables. First, we rely on studies into the determinants of CSR disclosure, and

[6] In the robustness section of the paper we experiment with broader word windows.

include firm CSR performance, size, financial performance and leverage as control variables. Second, we include additional variables that control for the report format itself, namely the length of the report (*report_length*) and whether the report is established in accordance with the GRI Sustainability Reporting Guidelines (*gri*). The variables of equation (1) are summarized in Table 2 and are explained in greater detail below.

[Insert Table 2 about here]

Based on the results of empirical studies investigating the relation between sustainability performance and sustainability disclosure (Al-Tuwaijri, Christensen & Hughes, 2004; Cho & Patten, 2007; Clarkson, Li, Richardson & Vasvari, 2008; Clarkson Overell & Chapple, 2011; De Villiers & van Staden, 2006; Hummel & Schlick, 2016; Patten, 2002), we control for firm CSR performance. Our variable *CSR_performance* indicates a firm's level of CSR performance and is proxied by the aggregated CSR performance score provided by the ASSET4 database (Thomson Reuters, 2015).[7] Firm size (*size*) is measured as the logarithm of total assets at fiscal year-end. Some prior studies report a positive relation between firm size and voluntary CSR disclosure (Branco & Rodrigues, 2008; Clarkson et al., 2008; Dawkins & Fraas, 2011). Potential explanations for this relation refer to the existence of economies of scale with regard to information production costs (Clarkson et al., 2008) and higher public pressure (and thus increased disclosure) of large firms (Branco & Rodrigues, 2008; Dawkins & Fraas, 2011). We also follow prior studies (Clarkson et al., 2008; Clarkson et al., 2011; Dawkins & Fraas, 2011) and control for firm financial performance (*financial_performance*) – measured as the return on assets at fiscal year-end – as a proxy for a firm's financial capability to establish CSR disclosure. Finally, we include firm leverage – measured as the ratio of total debt divided by total assets at fiscal year-end – as a proxy for the informational

[7] This score is based on more than 500 single data points indicating a firm's social performance with regard to its workforce, customers and society on an annual basis. Since the launch of the database in 2004, data from the ASSET4 database have been increasingly used in research, for instance by Cheng, Ioannou & Serafeim (2014); Trumpp Endrikat, Zopf & Guenther (2015); and Ziegler, Busch & Hoffmann (2011).

needs of a firm's creditors (*leverage*). *Size*, *financial_performance*, and *leverage* are winsorized at the top and bottom 1% to limit the influence of outliers. We have no expectations regarding the sign of the relations, as the results from prior studies cannot be directly translated to our disclosure measures.

In addition, we control for the length of the voluntary CSR disclosure as more comprehensive reports are more likely to cover the predefined topics. We measure *report_length* as the logarithm of the total words of each report. We also control for whether the report follows the GRI Sustainability Reporting Guidelines (*gri*=1). The GRI Sustainability Reporting Guidelines provide a standardized framework for sustainability reporting which may influence the reporting on our pre-defined topics. While the GRI guidelines explicitly cover the reporting on parental (leave) policies as well as climate-related impacts, the guidelines do not cover the disclosure on education and philanthropy. We thus expect to find a positive relation only with *discl_parental and discl_climate*, but not with *discl_education* and *discl_philanthropy*. Finally, we include industry and year dummies to control for industry- and time-specific variance in CSR disclosure.

5. Results

Descriptive statistics

Panel A of Table 3 reports the descriptive statistics for the regression variables. Our topic-specific disclosure measures, *discl_education*, *discl_philanthropy*, *discl_parental* and *discl_climate* have mean values that range between 0.0116 (*discl_parental)* and 0.0683 (*discl_climate*). The mean values are close to zero due to the construction of the scores. The results are similar to those obtained by Hoberg & Maksimovic (2015). The variables measure the degree to which the firm's CSR disclosure is similar to the constructed topic-specific vocabulary of the training set and thus provides measures for how explicitly a firm addresses these topics in its CSR disclosure. We further provide some comprehensive data to show the appropriateness of our topic-specific disclosure measures in Panel B and Panel C of Table 3.

Panel B presents the descriptive statistics for the twenty-word windows. The search query (i.e. the first step of the procedure) results in 1,563 reports (41%) that load[8] with respect to education, 1,473 reports (38%) that load with respect to philanthropy, 1,011 reports (26%) that load with respect to parental policies, and 3,286 reports (85 %) that load on climate change. On average, the identified reports contain 4.08 twenty-word windows on education, 3.78 twenty-word windows on philanthropy, 3.05 twenty-word windows on parental policies, and 21.16 twenty-word windows on climate change. Panel C of Table 3 reports the top twenty words of the training set for each topic-specific disclosure measure, i.e. across all retrieved twenty-word windows, along with the frequency the word occurs in the training set (in parentheses). These top twenty words provide some indication regarding the content of the twenty-word windows. Intuitively, the twenty-word windows appear to capture the content of the topic areas adequately, which supports the validity of our measures.

Our main variable of interest, *LME*, indicates that 47 percent of the voluntary CSR disclosure in our sample is provided by firms that are located in LMEs. With respect to the control variables, the results are in line with our sampling procedure—the level of CSR performance is relatively high (mean value of 84 on a scale between zero and 100), which might also be related to the underlying sample selection, namely excluding firms that do not provide voluntary CSR disclosure. On average, our sample firms have assets of USD 95.5 million (original values, untabulated). Return on assets is, on average, 0.08, while leverage is, on average, 0.46, which are both consistent with the findings of prior studies (Clarkson et al., 2008). On average, the voluntary CSR disclosure of our sample firms comprise 34,770 words (original values, untabulated) with a considerable standard deviation of 27,622 words. The results for our control variables well reflect our sample composition, focussing on large and listed firms.

[8] Loading means, that the respective reference word appears in the report at least once.

[Insert Table 3 about here]

Panel A of Table 4 shows the descriptive statistics separated for CME and LME. For the topics the results show that the similarity is higher for LMEs for education and parental leave; for philanthropy, ecology and climate the mean value is higher for CME. The t-tests reveal that the differences are significant for all topics.

Panel B of Table 4 presents bivariate Pearson correlation coefficients for the regression variables. The coefficients indicate that all our topic-based measures are positively related to each other and to CSR_performance, size, report_length (except philanthropy) and gri (except discl_education). With respect to our main variable of interest, *LME*, there is a positive correlation with education and philanthropy and there are negative correlations with parental leave and climate. Therefore, based on the univariate statistics we find support for our hypothesis only for the topics education and philanthropy. In addition, the correlation statistics indicate that firms in LMEs are larger and more profitable. Based on these univariate statistics is thus appears reasonable to control for these variables.

[Insert Table 4 about here]

Findings from regression analyses

Table 5 provides the results from regression analyses with respect to the testing of our hypothesis, i.e. the results for equation (1). Each column corresponds to one topic and disclosure measure, respectively. Adjusted R-squares range between 0.19 and 0.25, which is in line with prior studies that investigate measures derived from textual analysis (De Franco, Hope, Vyas & Zhou, 2015).

[Insert Table 5 about here]

Our results in *column I* reveal a positive and significant relationship for the topic education, supporting our hypothesis. As expected, firms located in LMEs provide significantly more explicit information on their engagement in education than firms located in CMEs. The partly privatized educational systems in LMEs allow firms to engage in education

and voluntarily report about their engagements in their CSR disclosure. On the other hand, there is not much room for private firm engagement in CMEs due to the strictly administered public education systems and the general reservation towards private engagement. With respect to the control variables, we obtain a positive and significant coefficient for CSR_performance, report_length and size. Therefore, longer reports are more likely to report on education and our positive and significant coefficient for *size* and *report_length* confirms that bigger firms and firms with superior CSR performance are more likely to explicitely report about education. As expected, reports in accordance with the GRI reporting guidelines provide less information on educational issues.

For philantropy, our results also document a positive and significant relation with *LME*. This finding supports our reasoning that firms in LMEs more explicitly disclose their philanthropic engagements as part of their CSR communication. This finding is consistent with the findings of prior studies by Maignan & Ralston (2002) and Chen & Bouvain (2009). Again, *CSR_performance*, *size* and *report_length* are positively correlated with *discl_philanthropy* whereas *gri* is negatively related to *discl_philanthropy*.

The results for parental leave are in contrast to our expectations, revealing a negative and significant relationship between *LME* and *discl_parental.* More precisely, firms in LMEs do not report more explicitly about parental leave policies in their voluntary CSR disclosure compared to firms in CMEs. Our results rather suggest that firms in CMEs report more explicitly about parental leave policies. In view of prominent examples of public statements with respect to maternal leave policies of U.S. blue chip companies (Adamczyk, 2015), this result is rather surprising. However, Matten & Moon (2008) argue for an adoption and diffusion of explicit CSR in CMEs over time due to an increasing level of standardization in CSR disclosure, mimicking and normative pressure by educational and professional authorities. Our findings might therefore pick-up a time trend towards more explicit CSR in CMEs with respect to parental policies that was triggered by an increased media presence of

the topic. Another potential reason for this finding could be an increasing demand for female labour participation in CMEs due to a declining working-age population. In this case, firms in CMEs explicitly report on their actions with respect to parental policies to attract potential employees. Finally, the unexpected finding could also reflect a general rise in the discussion of gender issues in CMEs. Based on our data, it is difficult to disentangle overlapping effects and we therefore leave it to future research to provide more in-depth insights into this result. With respect to the control variables, firms with a better CSR performance provide more explicit information on parental (leave) policies in their CSR reports. Moreover, longer reports and reports that follow the GRI sustainability reporting guidelines are more likely to report on parental (leave) policies, as the GRI guidelines require the disclosure on this topic.

Similar to the disclosure on parental leave policies, we also find a negative and significant relationship between LME and the disclosure on climate change. This relationship is against our expectations indicating, that not firms located in LMEs but in CMEs report more explicitly about the environment. Here, a potential explanation could be that the topic of climate change is more severely discussed and thus prevalent in CME societies than in LMEs and that firms need to explicitly address the topic for legitimacy reasons. With respect to the control variables, we obtain positive and significant coefficients for a firm's CSR performance and size as well as the length of the report and the adherence to GRI reporting standards while we obtain negative and significant coefficient for financial performance. Thus, larger and less profitable firms, firms with superior CSR performance, longer reports and reports that follow the GRI guidelines are more likely to report on climate change.

6. Further analyses

Robustness checks

We perform a number of additional analyses to further strengthen our results. First, we explore the fact that the proportion of GRI reports is significantly higher in our sub-sample of reports in CMEs compared to our sub-sample of reports in LMEs. This significant difference

might partly drive our results, as we expect GRI reports to include more information on parental policies and climate change and less information on educational and philanthropic issues due to the topics covered by the reporting guidelines. We therefore re-run the regressions for the sub-sample of GRI reports only (n=2,702). The results for *LME* are similar to our baseline model, in particular we obtain positive and significant coefficients for *LME* with respect to *discl_edcuation* and *discl_philanthropy* and negative and significant coefficients for *discl_parental and discl_climate*. We also re-run the regression for the subsample of non-GRI reporters (n=1,132) and still obtain these findings. Therefore, our main findings are not primarily driven by the adherence to the GRI guidelines but rather by distinct differences in the handling of CSR between firms located in LMEs versus CMEs.

Second, we investigate whether our findings do not merely reflect higher-quality CSR disclosure by firms located in LMEs. First, we re-run the regressions including CSR disclosure quality as additional control variable. As a proxy for CSR disclosure quality (*discl_quality*), we use the ESG disclosure score provided by the Bloomberg database, which is commonly used in research on CSR disclosure (Ioannou & Serafeim, 2017). This score measures a firm's disclosure regarding environmental, social and governance issues based on 219 raw data points and ranges in the interval between 0.1 and 100. Note that our sample for this additional analysis is slightly reduced (n=3,629) due to missing observations on the ESG disclosure score. Our main findings remain unchanged (untabulated). Specifically, *discl_quality* is positvely related to all of our disclosure measures. Next, we re-run the regression analyses with CSR disclosure quality as dependent variables. The results indicate a negative and significant relation between *LME* and *discl_quality* thereby indicating that firms located in LMEs provide CSR disclosure of lower quality compared to firms located in CMEs. This finding is in accordance with prior studies' findings on cross-national differences in CSR disclosure quality (Orij, 2010; Simnett et al., 2009; Van der Laan Smith et al., 2005). Moreover, it supports our reasoning that the different institutional environments result in

different handlings of voluntary CSR disclosure with respect to topic specifics, but not in higher quality of CSR disclosure for firms in LMEs.

Third, we account for the rich and steadily increasing literature on textual analysis in accounting research, which provides other approaches for the measurement of topic explicitness. Specifically, we vary in how we construct our textual variables. First, we additionally adjust our topic-specific disclosure measures for standard boilerplate content. For that purpose, we regress each similarity measure on a boilerplate measure and use the residuals from each regression as our topic-specific disclosure measure. The boilerplate variable is constructed as the cosine similarity between the report's vocabulary and the vocabulary of all reports in CMEs and LMEs, respectively. The results are displayed in Panel A of Table 6 and show that our main findings hold.

Second, we re-run our textual analysis based on a forty-word window (instead of a twenty-word window). By enlarging the size of the word window we broaden the vocabulary of the training set. A broader vocabulary might include more topic-specific words, but also adds noise to the vocabulary by capturing off-topic words. Again, the subsequent procedures for calculating the alternative topic-specific disclosure measures are equal to our main analysis. The results are consistent with our main findings except for *discl_climate* which becomes now insignificant (Panel B of Table 6). Taken together, this second set of analyses predominantly corroborates the robustness of our results with regard to our topic-specific disclosure measures.

[Insert Table 6 about here]

Fourth, we account for concerns that our findings are primarily driven by translation issues. We therefore re-run the analyses for a sample of Canadian firms (LME=1) and French and German firms (LME=0). Our findings of topic-specific differences between LMEs and CMEs remain identical to our baseline specification.

Finally, we address concerns regarding the measurement of our main variable of interest, LME. While our classification of countries into LME versus CME is in accordance with Matten and Moon (2008), we acknowledge that particularly the classification of UK as CME gives rise for discussion. Specifically, the observations for the UK (n=556) constitute almost 20 percent of our total sample. In order to rule out a potential impact of the classification of the UK as CME, we re-run our analyses in two ways. First, we exclude the UK of our analyses and second, we classify the UK as LME. With respect to our first analysis, the results for the reduced sample of 3,278 observations remain unchanged compared to our baseline specification. With respect to our second analysis, the results for the topics education, philanthropy and parental leave policies remain unchanged. The result for climate remains negative, yet becomes insignificant in this specification.

Taken together, the results from the additional analyses indicate that our results are robust to different sample specifications and various other disclosure measures obtained from textual analysis.

Language Characteristics

Referring to (Matten & Moon, 2008) the institutional environment also has an impact on the language of voluntary CSR disclosure. The most commonly addressed textual characteristics of the language are readability and tone.[9] We acknowledge that because our sample also consists of non-English-speaking countries, our results could be biased and include them within our further analyses. However, since we investigate only big and global companies, we expect this caveat to not weaken our results.

We assess the following textual characteristics: readability, tone and boilerplate content. Readability refers to how easily the reader can grasp the intended message of the text (LMD, 2016). Typical readability measures assess the complexity of the language. The most

[9] Note, that these measures are calculated based on the complete voluntary CSR disclosure and are not restricted to certain topics of disclosure.

prominent and widely used measure of readability is the Fog Index, which is computed as the sum of the average number of words per sentence and the percentage of complex words[10] multiplied by 0.4. The Fog Index indicates "the number of years of formal education a reader of average intelligence would need to read the text once and understand that piece of writing with its word-sentence workload" (Li, 2008).[11] Other measures include the Flesch-Kincaid and the Flesch Reading Ease, which are computed based on the average number of words per sentence and the average number of syllables per word. We follow De Franco et al. (2015) and create an aggregate measure of readability based on the Fog Index, the Flesch-Kincaid, and the Flesch Reading Ease. More precisely, *discl_readability* is measured based on the average of the percentile ranks for each component, divided by 100 and multiplied by (-1) to enhance the intuitive interpretation of the measure.[12] Thus, higher values in *discl_readability* reflect a better readability of the text and thus more explicit disclosure.

The second measure is *discl_tone* and measures the tone of the voluntary CSR disclosure. While readability formulas focus on the complexity of words and sentences by measuring the length thereof, they do not consider the attitude of the author who writes the text. The attitude of an author is revealed by the words used in a text – which is usually called the *tone* of a text. Notwithstanding other methods, typical measures that analyse the tone of texts rely on word lists that classify words as positive, neutral or negative. Such dictionary-based approaches are simple, yet powerful techniques to analyse texts (Loughran & McDonald, 2016). Tone is then measured as the frequency of positive (negative) words. We use the Loughran & McDonald (2011) word list to identify the sentiment of the voluntary CSR disclosure. This word list has been specifically designed for accounting research. Consistent with prior research (Davis, Piger & Sedor, 2012; Henry & Leone, 2016; Huang,

[10] Complex words are words with three or more syllables.
[11] According to Li (2008), a Fog Index between 14 and 18 represents a text with difficult readability; a Fog Index between 12 and 14 a text with ideal readability; and a Fog Index between 10 and 12 a text with acceptable readability. A Fog Index below 10 (above 18) represents a childish (unreadable) text.
[12] To obtain consistent interpretations of *discl_readability*, we use the (101-percentile rank) for FRE.

Teoh & Zhang, 2014), our variable *discl_tone* is measured as the number of positive words minus the number of negative words divided by the number of total words of the voluntary CSR disclosure. Higher values thus reflect a more positive tone, yet we have no expectations about how tone is associated with explicitness of disclosure.

The third measure refers to boilerplate content, i.e. the disclosure of generic and standardized content. In the context of annual report disclosure, Lang and Stice-Lawrence (2015) reveal that international accounting standards and greater oversight are negatively associated with boilerplate content. Moreover, less informative reporting captured by boilerplate content and readability, is associated with decreased liquidity, analyst following, and institutional ownership. We follow Lang and Stice-Lawrence (2015) and Dyer et al. (2017) and measure *boilerplate* as the logarithm of the number of words in sentences that include at least one 4-word phrase that is among the 10 most frequent 4-word phrases across all reports. More boilerplate content reduces the informativeness of the reports, yet again we have no expectations about the associations between LME and boilerplate.

[Insert Table 7 about here]

The results with respect to the textual characteristics are displayed in Table 7. Panel A of Table 7 shows the descriptive results. They exhibit a Gunning Fog Index of approximately 15, indicating that on average 15 year of education are necessary to understand a CSR report. For tone we find an average of 1.6 and boilerplate amounts to 4.77. In view of the results of (Lang & Stice-Lawrence, 2015) for annual reports providing a mean Fog of 19.52 and a mean boilerplate of 7.045, our results are plausible and confirm that CSR reports are more readable than annual reports and contain less boilerplate content. Panel B displays the results from the regression analyses. In contrast to our expectations, LME is negatively associated with *discl_readability* thereby revealing that the reports provided by firms in LMEs are less readable. With respect to tone, there is a positive and significant relation between *LME* and *discl_tone*. The disclosure provided by firms in LMEs is more positive in tone compared to

the disclosure provided by firms in CMEs. With respect to boilerplate content, we also obtain a positive and significant coefficient for LME thereby indicating that the reports provided by firms in LMEs are less informative.[13]

Hofstede

Although the binary distinction into liberal versus coordinated market economies is consistent with Matten & Moon (2008), a more fine-grained distinction of the sample countries based on the underlying characteristics of liberal versus coordinated market economies might enable us to investigate the topic differences in voluntary CSR disclosure more thoroughly. We therefore follow prior research on cultural differences in CSR disclosure (Orij, 2010; Van der Laan Smith et al., 2005) and rely on the national culture index provided by Hofstede (2016) as an alternative proxy for the distinction between liberal versus coordinated market economies. We argue that liberal market economies are best characterized by the three dimensions of power distance (PDI), individualism (IDV) and masculinity (MAS). Power distance refers to the "degree to which the less powerful members of a society accept and expect that power is distributed unequally", with higher values indicating more distant societies (Hofstede, 2016). Individualism describes the "preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families", with higher values indicating more individualistic societies (Hofstede, 2016). Masculinity denotes a "preference in society for achievement, heroism, assertiveness and material rewards for success" (Hofstede, 2016). Again, higher values reflect more masculine societies. We run the regressions with each of these dimensions and with the average of the three dimensions (*hofstede*) as proxies for liberal market economies. The results are shown in Table 8. For IDV, MAS and hofstede the results are similar to those from our baseline model, except that the relationship with *discl_climate* is not significant in all

[13] These findings are similar compared to univariate statistics obtained from t-tests of mean differences in readability, tone and boilerplate.

models. However, regarding PDI we obtain quite contrary results for *discl_education* and *discl_philanthropy* which are negatively and significantly related to PDI.

[Insert Table 8 about here]

7. Conclusions

Firms' CSR practices and disclosure respond to the institutional environment. In CMEs, CSR practices are governed by the state through legislation and rule-setting. While firms implicitly comply with these laws and regulations, their explicit communication about CSR practices is limited – which is also reflected in their voluntary CSR disclosure. In LMEs, on the other hand, there is considerably less regulation on CSR practices – which results in more private (firm) engagement and thus more explicit CSR disclosure. This paper thus examines differences in the *topics* of voluntary CSR disclosure between firms located in CMEs versus LMEs.

For that purpose, we rely on measures derived from textual analysis. Specifically, we concentrate on four topics for which the institutionalized social solidarity is significantly lower in LMEs compared to CMEs: education, philanthropy, parental (leave) policies, and climate change. To investigate differences in CSR disclosure with respect to these topics, we follow the methodology of Hoberg and Maksimovic (2015) and introduce novel textual measures based on cosine similarities. For a sample of 3,834 CSR reports across nine reporting years, our results show that voluntary CSR disclosure by firms in LMEs is indeed more explicit with regard to education and philanthropy. However, contrary to our expectations, we find more explicit disclosure on parental policy and climate change among firms located in CMEs.

As for theory contribution, we can argue that in terms of subjects and activities of CSR the entrenched institutional differences between LMEs and CMEs indeed persist. In this vein then, the continuous manifestation of implicit versus explicit forms of CSR is indeed visible. However, the opposed significant differences in the topics parental policy and climate

change point to the fact that CSR is spreading to CMEs, as posited in the initial Matten and Moon (2008) conceptualisation. The interesting finding then of our study is that we could arguably identify what Matten & Moon (2008) recently argued, is the 'explicitization' of implicit CSR in CMEs — in other words, as CSR spreads globally as a management practice and gains public interest and media attention, it leads companies in CMEs to not necessarily change their CSR practices as such (the differences manifest in our data speak to that) but they couch and assimilate their CSR approach into a form and language that conforms to the global CSR discourse. Our choice of reporting therefore was quite crucial as non-financial reporting has become a global requirement mostly driven by financial interests and various rating agencies, hence we see persistent differences in what companies do in terms of CSR but increasing convergence in how they talk about it.

As it is generally the case, the results are subject to some limitations, which also provide avenues for future research. First, despite an increasing trend in accounting research towards the use of quasi-natural experimental methods to draw causal inferences (Bertomeu, Beyer & Taylor, 2016), this paper puts emphasis on the testing of a theoretical framework and does not claim to methodologically solve the endogeneity problem. Rather, the paper provides insights into the textual characteristics of CSR. Second, similar to other empirical studies on voluntary CSR disclosure, the generalizability of our findings depends on our sample and is thus restricted to large, publicly listed firms that provide voluntary CSR disclosure. However, such firms typically operate internationally, and we thus expect to find even greater differences in the explicitness of voluntary CSR disclosure among smaller firms. Moreover, in order to avoid any bias with respect to translation issues, we restrict our sample to English-speaking countries in our analysis. Third, the usual weaknesses of textual analysis apply. In particular, one has to account for the context of the respective disclosure, which may impact our results on readability and tone. Neither word lists tailored to an accounting purpose nor general word list may appropriately capture the disclosure tone in the CSR context.

These limitations give rise to future research opportunities. In particular, we suggest further investigations to examine a broader range of topics. Moreover, there is a general lack of research on voluntary CSR disclosure among small- and medium-sized enterprises. Future research might investigate whether our findings prevail to a sample of small- and medium-sized enterprises. Assuming less internationalization of small- and medium-sized enterprises, CSR disclosure between firms in LMEs and firms in CMEs could even differ more. Last but not least, we invite researchers to draw on this study and further develop the methodology of textual analysis for CSR disclosure research. Similarly, there is a need for more specific word lists to assess the tone of disclosure in the CSR context. Overall, there are manifold opportunities for textual analysis research on CSR disclosure, as it still is at a rather nascent stage.

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TABLE 1. Sample selection and distribution

Panel A: Sample selection	total
Initial population of firm-year observations for 1200 firms (firms listed in Stoxx Europe-600 and Stoxx US-600) and 9 reporting years (2008-2016)	10,800
Less: observations without CSR disclosure	-5,963
	4,837
Less: observations that cannot be processed in textual analysis	-584
	3,952
Less: observations with missing values for control variables	-118
Total sample	**3,834**

Panel B: Sample distribution by country	
Liberal market economies:	
Canada	182
United States	1,614
Sub-total	**1,796**
Coordinated market economies:	
Austria	26
Belgium	75
Switzerland	154
Czech Republic	3
Germany	246
Denmark	80
Spain	117
Finland	67
France	274
United Kingdom	556
Ireland	26
Italy	91
Luxembourg	12
Netherlands	110
Norway	32
Portugal	10
Sweden	159
Sub-total	**2,038**
Total	**3,834**

Panel C: Sample distribution by industry group				
		CME	LME	Total
1	Mining and construction	164	101	265
2	Manufacturing	796	735	1,531
3	Transportation and public utilities	350	305	655
4	Wholesale and retail trade	138	165	303
5	Finance, insurance and real estate	388	338	726
6	Services	202	152	354
Total sample		**2,038**	**1,796**	**3,834**

TABLE 2. Variables description

Variable	Description	Source of data
Dependent variables		
discl_education	similarity of the firm's voluntary CSR disclosure with a vocabulary that reflects disclosure on the firm's engagement in education [search term: "scholarship"]	textual analysis
discl_philanthropy	similarity of the firm's voluntary CSR disclosure with a vocabulary that reflects disclosure on the firm's engagement in philanthropy [search terms: "philanthropy", "charitable giving"]	textual analysis
discl_parental	similarity of the firm's voluntary CSR disclosure with a vocabulary that reflects disclosure the firm's engagement with respect to parental leave policies [search terms: "parental leave", "maternity leave", "paternity leave"]	textual analysis
discl_climate	similarity of the firm's voluntary CSR disclosure with a vocabulary that reflects disclosure the firm's engagement with respect to parental leave policies [search term: "climate", "global warming"]	textual analysis
Main variable of interest		
LME	dummy variable indicating whether a firm's headquarters are located in a liberal market economy (equals 1) or a coordinated market economy (equals 0) as indicated in Panel B of Table 1	datastream
Control variables		
CSR_performance	ASSET4 CSR performance score ranging in the interval [0, 100]; details provided by ThomsonReuters (2015)	asset4
gri	dummy variable indicating whether the report is in accordance with the GRI Sustainability Reporting Guidelines (equals 1) or not (equals 0)	asset4
size	firm size measured as the logarithm of the total assets at fiscal year end, winsorized at the top and bottom 1%	datastream
financial_performance	financial performance of the firm, measured as EBIT divided by total assets at fiscal year end, winsorized at the top and bottom 1%	datastream
leverage	financial leverage of the firm measured as total debt divided by total assets at fiscal year end, winsorized at the top and bottom 1%	datastream
report_length	logarithm of the total number of the report's words after applying standard procedures as described in section ~~3.~~24 of this paper	textual analysis
industry	industry group dummy variables as reported in Panel C of Table 1	datastream
year	year dummy variables with the year 2008 as reference category	sustainability disclosure

TABLE 3. Descriptive statistics

Panel A: Descriptive statistics on regression variables

	mean	**median**	**sd**	**min**	**max**	**n**
discl_education	0.0203	0.0164	0.0150	0.0000	0.1868	3,834
discl_philanthropy	0.0257	0.0210	0.0190	0.0000	0.3212	3,834
discl_parental	0.0116	0.0092	0.0094	0.0000	0.0750	3,834
discl_climate	0.0683	0.0635	0.0350	0.0000	0.2416	3,834
LME	0.4684	0.0000	0.4991	0.0000	1.0000	3,834
CSR_performance	0.8437	0.9033	0.1552	0.0421	0.9748	3,834
size	16.8275	16.6644	1.6220	13.5183	21.2029	3,834
financial_performance	0.0846	0.0744	0.0725	-0.0968	0.3238	3,834
leverage	0.4366	0.4226	0.2348	0.0000	1.0854	3,834
report_length	9.7937	9.9393	1.0813	0.0000	12.5308	3,834
gri	0.7047	1.0000	0.4562	0.0000	1.0000	3,834

Panel B: Descriptive statistics on the twenty-word windows

				number of twenty-word windows in the identified reports			
disclosure measure	# reports	# reports with identified search term(s)	% of reports with identified search term(s)	mean	sd	min	max
discl_education	3,843	1,563	40.67%	4.08	4.93	1	47
discl_philanthropy	3,843	1,473	38.33%	3.78	5.72	1	111
discl_parental	3,843	1,011	26.31%	3.05	3.05	1	22
discl_climate	3,843	3,286	85.51%	21.16	38.95	1	905

Panel C: Overview of the top twenty words in the retrieved twenty-word windows

disclosure measure	words	total words	total unique words
discl_education	'scholarship' (10,852),'program' (3,431), 'student' (3,315), 'university' (1,804), 'employee' (1,676), 'education' (1,577), 'school' (1,536), 'support' (1,483), 'foundation' (1,374), 'college' (1,353), 'awarded' (1,247), 'community' (1,203), 'child' (1,176), 'fund' (1,099), 'award' (856), 'grant' (751), 'programme' (690), 'company' (625), 'training' (614), 'national' (574), 'young' (566), 'educational' (546), 'help' (545), 'study' (542), 'high' (520), 'local' (519), 'people' (502), 'opportunity' (488), 'project' (472), 'development' (457)	142871	9457
discl_philanthropy	'philanthropy' (5,434), 'community' (3,296), 'giving' (2,456), 'corporate' (2,390), 'charitable' (2,159), 'employee' (1,657), 'foundation' (1,218), 'program' (1,119), 'business' (1,090), 'report' (916), 'support' (911), 'company' (889), 'social' (861), 'local' (776), 'global' (700), 'responsibility' (659), 'impact' (602), 'initiative' (592), 'environmental' (592), 'health' (589)	124,247	7,840

discl_parental	'leave' (6,358), 'employee' (3,744), 'parental' (3,535), 'work' (1,992), 'maternity' (1,818), 'woman' (1,166), 'return' (1,060), 'paternity' (949), 'rate' (906), 'time' (889), 'men' (831), 'number' (830), 'gender' (774), 'retention' (676), 'part' (516), 'returned' (510), 'paid' (499), 'working' (467), 'took' (464), 'benefit' (461)	72,640	3,755
discl_climate	'climate' (108,176), 'change' (65,452), 'energy' (24,581), 'emission' (18,113), 'environmental' (14,878), 'risk' (13,918), 'global' (12,560), 'report' (11,883), 'impact' (10,958), 'environment' (10,843), 'business' (10,793), 'carbon' (10,357), 'sustainability' (10,066), 'company' (9,417), 'water' (8,589), 'protection' (8,488), 'gas' (8,330), 'policy' (8,018), 'management' (7,984), 'strategy' (7,515)	1,612,656	25,880

Panel A of this Table presents descriptive statistics for the variables used in the regression analysis. Panel B of this Table presents descriptive statistics on the twenty-word windows for each disclosure measure. Panel C of this Table presents the top twenty words for each topic-specific vocabulary. The frequency the respective word appears in the training set is indicated in parentheses.

TABLE 4. Univariate statistics

Panel A: Differences in means

	LME	LME	CME	CME		
	mean	**sd**	**mean**	**sd**	**t**	**p-value**
discl_education	0.0248	0.0175	0.0163	0.0108	-18.4066	0.0000
discl_philanthropy	0.0327	0.0225	0.0195	0.0123	-22.8752	0.0000
discl_parental	0.0088	0.0076	0.0140	0.0102	17.4407	0.0000
discl_climate	0.0603	0.0339	0.0754	0.0345	13.6545	0.0000
CSR_performance	0.8357	0.1585	0.8506	0.1519	2.9673	0.0030
size	16.8896	1.4140	16.7728	1.7838	-2.2275	0.0260
financial_performance	0.0949	0.0744	0.0755	0.0696	-8.3136	0.0000
leverage	0.4350	0.2182	0.4380	0.2485	0.3951	0.6928
report_length	9.4407	1.1616	10.1048	0.8969	19.9321	0.0000
gri	0.6320	0.4824	0.7689	0.4216	9.3785	0.0000

Panel B: Correlation statistics

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**
(1)	1.0000										
(2)	0.4766	1.0000									
	(0.0000)										
(3)	0.1997	0.2382	1.0000								
	(0.0000)	(0.0000)									
(4)	0.2616	0.3679	0.5772	1.0000							
	(0.0000)	(0.0000)	(0.0000)								
(5)	0.2866	0.3497	-0.2696	-0.2105	1.0000						
	(0.0000)	(0.0000)	(0.0000)	(0.0000)							
(6)	0.0650	0.0836	0.1622	0.2929	-0.0475	1.0000					
	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0032)						
(7)	0.2593	0.2336	0.1845	0.2718	0.0461	0.2029	1.0000				
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0038)	(0.0000)					
(8)	-0.0638	-0.0471	-0.1083	-0.1464	0.1273	0.0028	-0.4422	1.0000			
	(0.0001)	(0.0032)	(0.0000)	(0.0000)	(0.0000)	(0.8645)	(0.0000)				
(9)	0.0613	0.0682	0.0793	0.0782	-0.0084	0.0332	0.3178	-0.2722	1.0000		
	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.5995)	(0.0391)	(0.0000)	(0.0000)			
(10)	0.0586	-0.0394	0.3408	0.3868	-0.3041	0.3086	0.1949	-0.0680	0.0816	1.0000	
	(0.0002)	(0.0132)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)		
(11)	-0.0227	0.0291	0.2370	0.3014	-0.1247	0.3987	0.2104	-0.0602	0.0397	0.4151	1.0000
	(0.1540)	(0.0672)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0002)	(0.0126)	(0.0000)	

(1) discl_education, (2) discl_ philanthropy, (3) discl_parental, (4) discl_climate, (5) LME, (6) CSR_performance, (7) size, (8) financial_performance, (9 leverage, (10) report_length, and (11) gri.

Panel A of this Table presents descriptive statistics for the sub-sample of voluntary CSR disclosures issued by firms that are located in liberal market economies (LME=1) and the sub-sample of firms that are located in coordinated market economies (LME=0) separately along with the results from a t-test of mean differences. Panel B of this Table presents bivariate Pearson correlation coefficients and p-values (in parentheses) for a two-tailed test of statistical significance. Statistics are presented for the full sample of 3,834 firm-year observations. *, **, and *** represent significance levels of 0.10 [or 10 percent], 0.05 [or 5 percent], and 0.01 [or 1 percent], respectively.

TABLE 5. Results from regression analysis

VARIABLES	(1) discl_education	(2) discl_philanthropy	(3) discl_parental	(4) discl_climate
LME	0.0066***	0.0102***	-0.0022***	-0.0096***
	(19.2143)	(24.8635)	(-11.3928)	(-8.9248)
CSR_performance	0.0076***	0.0119***	0.0025***	0.0341***
	(6.4208)	(8.4061)	(3.8791)	(9.1852)
size	0.0013***	0.0013***	0.0001	0.0038***
	(9.7202)	(7.7722)	(1.0316)	(8.8944)
financial_performance	0.0019	0.0044	0.0011	-0.0162**
	(0.7346)	(1.4132)	(0.7745)	(-1.9886)
leverage	-0.0005	-0.0002	-0.0006	-0.0033
	(-0.6799)	(-0.2832)	(-1.4715)	(-1.4488)
report_length	0.0022***	0.0020***	0.0018***	0.0069***
	(12.6518)	(9.4823)	(18.8563)	(12.6531)
gri	-0.0014***	-0.0013***	0.0014***	0.0070***
	(-3.5018)	(-2.6970)	(6.2109)	(5.4880)
Constant	-0.0304***	-0.0266***	-0.0108***	-0.0860***
	(-12.2658)	(-8.9567)	(-7.8255)	(-11.0438)
Observations	3,834	3,834	3,834	3,834
R-squared	0.1973	0.2567	0.2543	0.2400
F	46.86	65.86	65.03	60.21

This Table reports ordinary least squares coefficient estimates and t-statistics (in parentheses) based on Huber-White robust standard errors. *, **, and *** represent significance levels of 0.10 [or 10 percent], 0.05 [or 5 percent], and 0.01 [or 1 percent], respectively.

TABLE 6. Results from regression analyses with alternative topic-specific disclosure measures

VARIABLES	(1) discl_ education	(2) discl_ philanthropy	(3) discl_ parental	(4) discl_ climate
Panel A: cosine similarity with adjustments for boilerplate content				
LME	0.0066***	0.0102***	-0.0022***	-0.0096***
	(19.2143)	(24.8635)	(-11.3928)	(-8.9248)
observations	3,834	3,834	3,834	3,834
R-squared	0.1973	0.2567	0.2543	0.2400
Controls	YES	YES	YES	YES
industry fixed effects	YES	YES	YES	YES
year fixed effects	YES	YES	YES	YES
F	46.86	65.86	65.03	60.21
Panel B: disclosure measures based on forty-word windows				
LME	0.0095***	0.0154***	-0.0033***	-0.0010
	(20.0677)	(23.0595)	(-12.4367)	(-0.6294)
observations	3,834	3,834	3,834	3,834
R-squared	0.2122	0.2535	0.2671	0.1919
Controls	YES	YES	YES	YES
industry fixed effects	YES	YES	YES	YES
year fixed effects	YES	YES	YES	YES
F	51.36	64.74	69.49	45.26
Panel C: disclosure measures based on cosine similarity with search terms				
LME	0.0095***	0.0154***	-0.0033***	-0.0010
	(20.0677)	(23.0595)	(-12.4367)	(-0.6294)
observations	3,834	3,834	3,834	3,834
R-squared	0.2122	0.2535	0.2671	0.1919
Controls	YES	YES	YES	YES
industry fixed effects	YES	YES	YES	YES
year fixed effects	YES	YES	YES	YES
F	51.36	64.74	69.49	45.26

This Table reports ordinary least squares coefficient estimates and t-statistics (in parentheses) based on Huber-White robust standard errors. *, **, and *** represent significance levels of 0.10 [or 10 percent], 0.05 [or 5 percent], and 0.01 [or 1 percent], respectively.

TABLE 7. Additional analyses of language characteristics

Panel A: Descriptive statistics on language characteristics

	mean	median	sd	min	max	n
discl_readability	-0.5072	-0.5067	0.2768	-1.0000	-0.0100	3,834
Gunning Fog Index	14.9434	14.6884	3.0269	0.2544	31.5206	3,834
Kincaid	11.5264	11.2885	3.7876	-15.3358	66.9276	3,834
Flesch Reading Ease	45.4895	45.3407	20.9194	-371.6861	206.1452	3,834
tone_lmd	0.0161	0.0159	0.0131	-0.1010	0.0960	3,834
boilerplate_content	4.7725	4.7095	1.0752	0.0000	8.3666	3,834

Panel B: Regression results for language characteristics

VARIABLES	(1) discl_readability	(2) discl_tone	(3) boilerplate
LME	-0.0671***	0.0048***	0.3636***
	(-6.6071)	(12.5511)	(14.2297)
CSR_performance	0.0269	0.0105***	0.1398
	(0.7671)	(8.0009)	(1.5884)
size	-0.0253***	0.0001	0.0120
	(-6.3350)	(0.3635)	(1.1964)
financial_performance	-0.1051	0.0017	0.2642
	(-1.3690)	(0.5980)	(1.3697)
leverage	0.1019***	0.0005	0.0081
	(4.6966)	(0.5833)	(0.1486)
report_length	0.0015	-0.0033***	0.8336***
	(0.3001)	(-16.9759)	(61.5779)
gri	0.0416***	-0.0045***	0.0618**
	(3.4548)	(-10.0558)	(2.0396)
Constant	-0.2719***	0.0426***	-4.1865***
	(-3.6972)	(15.4235)	(-22.3494)
Observations	3,834	3,834	3,834
R-squared	0.0687	0.2492	0.5828
F	14.07	63.28	266.0

This Table reports ordinary least squares coefficient estimates and t-statistics (in parentheses) based on Huber-White robust standard errors. *, **, and *** represent significance levels of 0.10 [or 10 percent], 0.05 [or 5 percent], and 0.01 [or 1 percent], respectively.

TABLE 8: Results from an alternative assessment of liberal versus coordinated market economies based on Hofstede (2016)

	(1) discl_ education	(2) discl_ philanthropy	(3) discl_ parental	(4) discl_ climate
PDI	-0.0001***	-0.0000**	-0.0000	-0.0004***
	(-4.8864)	(-2.1568)	(-1.0015)	(-8.0032)
observations	3,834	3,834	3,834	3,834
R-squared	0.1212	0.1391	0.2346	0.2405
controls	YES	YES	YES	YES
industry fixed effects	YES	YES	YES	YES
year fixed effects	YES	YES	YES	YES
F	26.28	30.79	58.44	60.38
IDV	0.0002***	0.0004***	-0.0001***	-0.0000
	(15.3074)	(22.3540)	(-12.2910)	(-0.9191)
observations	3,834	3,834	3,834	3,834
R-squared	0.1646	0.2365	0.2627	0.2264
controls	YES	YES	YES	YES
industry fixed effects	YES	YES	YES	YES
year fixed effects	YES	YES	YES	YES
F	37.55	59.04	67.94	55.79
MAS	0.0001***	0.0001***	-0.0000***	0.0000
	(11.1495)	(10.5333)	(-4.7128)	(1.4940)
observations	3,834	3,834	3,834	3,834
R-squared	0.1424	0.1618	0.2367	0.2265
controls	YES	YES	YES	YES
industry fixed effects	YES	YES	YES	YES
year fixed effects	YES	YES	YES	YES
F	31.65	36.80	59.13	55.84
hofstede	0.0002***	0.0004***	-0.0001***	-0.0002***
	(11.6350)	(15.0373)	(-8.4629)	(-2.6911)
observations	3,834	3,834	3,834	3,834
R-squared	0.1443	0.1856	0.2436	0.2279
controls	YES	YES	YES	YES
industry fixed effects	YES	YES	YES	YES
year fixed effects	YES	YES	YES	YES
F	32.16	43.46	61.40	56.29

This table reports ordinary least squares coefficient estimates and t-statistics (in parentheses) based on Huber-White robust standard errors. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels (two-tailed), respectively. PDI is the power distance index, IDV is the individualism index and MAS is the masculinity index provided by (Hofstede, 2016). hofstede refers to the average of the three dimensions (i.e. PDI, IDV and MAS).

Appendix I.
Examples of twenty-word windows

twenty-word window	corresponding CSR disclosure
discl_parental	
['coaching', 'learning', 'session', 'online', 'portal', 'help', 'returning', 'considering', 'going', 'maternity', 'leave', 'date', 'programme', 'received', 'positive', 'feedback', 'encouraged', 'number', 'female', 'graduate']	*Associated British Foods, 2013, Corporate Responsibility Report 2013, p. 26*: "To help, we have established three work streams covering coaching, learning sessions and an online portal to help those returning from, or considering going on, maternity leave. To date, these programmes have received positive feedback. We are encouraged by the number of female graduates choosing to join our businesses with an almost equal ratio of females to males across the group."
discl_education	
['hispanic', 'executive', 'council', 'employer', 'forum', 'disability', 'stonewall', 'workplace', 'pride', 'example', 'scholarship', 'program', 'consortium', 'graduate', 'degree', 'minority', 'engineering', 'science', 'aim', 'improve']	*Cisco, 2012, Cisco CSR Report, p. D9*: "We partner with a range of diverse organizations, societies, and community groups to connect with potential employees such as the […], Hispanic IT Executive Council, Employers Forum on Disability, Stonewall, and Workplace Pride. For example, in the United States our scholarship program with the National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc., aims to improve access to top minority talent."
discl_philanthropy	
['help', 'achieve', 'millennium', 'development', 'goal', 'focused', 'reducing', 'mortality', 'woman', 'child', 'philanthropy', 'contributed', 'cash', 'product', 'program', 'country', 'responded', 'major', 'natural', 'disaster']	*Johnson & Johnson, 2010, Responsibility Report, p. 4*: "Notably in 2010 we embarked on a five-year commitment to the United Nations to help achieve Millennium Development Goals focused on reducing mortality in women and children by 2015. In our philanthropy, we contributed more than $608 million in cash and products toward over 700 programs in more than 50 countries. We responded to major natural disasters in Haiti, China, Chile and Pakistan and more recently in New Zealand and Japan.
discl_climate	
['help', 'achieve', 'millennium', 'development', 'goal', 'focused', 'reducing', 'mortality', 'woman', 'child', 'philanthropy', 'contributed', 'cash', 'product', 'program', 'country', 'responded', 'major', 'natural', 'disaster']	*Johnson & Johnson, 2010, Responsibility Report, p. 4*: "Notably in 2010 we embarked on a five-year commitment to the United Nations to help achieve Millennium Development Goals focused on reducing mortality in women and children by 2015. In our philanthropy, we contributed more than $608 million in cash and products toward over 700 programs in more than 50 countries. We responded to major natural disasters in Haiti, China, Chile and Pakistan and more recently in New Zealand and Japan.

This table presents examples of the twenty-word windows with the corresponding CSR disclosure for each topic-specific disclosure measure. Underlined words in the twenty-word windows represent the search term(s). Underlined words in the corresponding CSR disclosure indicate the first and the last word of the twenty-word window.